UNITED KINGDOM - STATUS REPORT

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INTRODUCTION

I am pleased to be here today to present the United Kingdom's Status Report at this ESV.

I will speak mainly about advances since the last ESV in Japan, rather than try to outline the full range of activities. At the heart of all our activity is the desire to reduce the road casualty toll as set out in our national road safety targets for 2010. Due to the time-lag between research, agreeing improved vehicle safety standards and compliant vehicles becoming common on our roads, it is mainly past activities that will help deliver the 2010 targets but I will also mention current work, which is expected to deliver further casualty reductions beyond that.

UK ROAD SAFETY TARGETS AND PROGRESS

In March 2000 the Government's road safety strategy was set out in "Tomorrow's Roads: Safer for Everyone". This set new targets for casualty reduction by 2010 compared with the Great Britain (that is England, Scotland and Wales together) average of casualties for 1994 to 1998.

- 40% for all killed and seriously injured (KSI)
- 50% for child (0-15 years) killed and seriously injured (KSI)
- 10% for the rate (by vehicle kilometres) of slight injuries.

These were considered challenging but achievable targets and were subject to three yearly review. So how are we doing so far?

We are on target for KSI overall with good progress on most groups, including pedestrians (26%) and car occupants (19%), the exception being motorcyclists for whom casualties rose by 16% but this is due to increased use, the number in terms of distance travelled having fallen. For car occupants, a worrying factor is that fatalities have recently started to rise in spite of the continuing reductions in serious injuries. Research has indicated that the increase in car occupant and motorcyclist fatalities is due to more single vehicle accidents linked to loss of control at bends, often on rural roads and in the case of cars, often involving young people.

RESEARCH

The UK devotes significant resources to national transport research every year and vehicle safety is the largest element. This programme currently covers about 50 separate projects into which we invest several million pounds each year. We have long recognised the value of collaborative international research and are committed to channeling our contributions through the European Enhanced Vehicles Committee (EEVC) and where possible, through the International Harmonised Research Activities (IHRA). We also do research to support government policy on more immediate issues that arise in negotiating vehicle standards in the both the EU and the UNECE World Forum. I would like to stress that, aside from other governments and research groups, we also welcome co-operation with manufacturers and other NGOs.

Accident Data Collection

This is a fundamental element of the research programme and the outputs are used in many research projects on specific topics.

The Co-operative Crash Injury Study (CCIS) is Europe's largest in-depth study investigating the performance of car structures, restraints and advanced safety systems in accidents and related occupant injuries. This involves three data collection teams examining about 1300 cars per year in the current phase. It is funded by DfT and seven manufacturers including vehicle and system or component manufacturers. This wide sponsorship has several advantages; it brings more funding, provides extra technical insights for both researchers and sponsors and most importantly allows manufacturers to use the data directly to improve their designs.

The Heavy Vehicle Crash Injury Study (HVCIS) currently provides data from several sources on truck, bus, coach, minibus, light goods vehicles (but not car derived vans) and agricultural vehicle accidents.

The On the Spot (OTS) study provides a wider range of information including accident causation and involves expert teams attending an accident scene to gather data that would otherwise be quickly

lost. Phase I successfully created a database on over 1400 accidents. Phase II of this project will continue for three years, investigating abut 500 accidents per year. This will contribute to increased understanding of vehicle, highway design and human aspects and how they contribute to accident causation and injury outcome. A current example is an analysis of the role of speed in crashes. OTS is jointly funded by vehicle, road safety and highways groups within the DfT.

Secondary Safety

We are continuing to benefit from improvements in secondary safety that have entered the market in recent years both in terms of more sophisticated restraint systems and greater structural integrity of vehicles. But it is important that we continue to make progress in this area and ensure that systems are optimised for a wider range of occupants and accidents. One of our projects is a fundamental review of secondary safety priorities. The aim is to determine where we can best focus our efforts in the longer term given the numbers and types of casualties, the potential secondary safety technologies that might be applied and the contribution secondary safety could make against a backdrop of a potential reduction in casualties from other vehicle and infrastructure improvements.

Front/Side impact and Compatibility: The UK has continued to support research to improve protection in front and side impact and compatibility. Through the EEVC, we have continued work on the development of the Advanced European Mobile Deformable Barrier (AE-MDB) intended to reflect modern European cars. We have also contributed to the development of a "free flight" head-form test intended to protect the head in side impacts and this has become one of the proposed IHRA tests. Through the SIBER project, we have been involved in an evaluation of World SID.

On compatibility, our research has included car to car tests, modelling and tests using a full width load cell wall as part of the on-going European VC-COMPAT research programme on possible test procedures. We have also supported further evaluation of potential assessment criteria. With Germany, we have researched national accident data which was used to identify a European target population which could benefit from improved compatibility.

Restraint systems: The rate of technological advance is welcome although at present it is outstripping our ability to assess how good new systems are. One of our projects, the assessment of advanced systems links with the European PRISM project. This project has looked at different dummy sizes (5% and 95%) and also the potential of a new dummy. A question which we may be addressing in future is whether regulations should encourage softer restraint systems with lower load limiters to give reduced chest injuries.

Motorcyclist Helmets: We are currently supporting research to further demonstrate that the use of new materials and construction techniques can deliver significant improvements in helmets with the potential to reduce fatalities by about 20%, while maintaining designs which are practical and acceptable to motorcyclists. This research is also developing advanced test methods for such helmets, which could be used either in consumer information programmes or in legislation.

Biomechanics: The emphasis of our work is on dummy evaluation, not development. Earlier work looked at using the advanced lower leg on the existing frontal impact dummy to investigate the assessment of lower extremity injuries. More recently, through the European advanced frontal impact project (FID), we have been involved in an evaluation of the Thor (FT) dummy. This showed promise although areas for further improvement were identified.

Large Vehicle Safety

Large and heavy vehicles pose special safety problems and our current research addresses the following topics.

Front Under-run Protection: We are contributing to the car to truck element of the European VC-COMPAT project, with a view to improving truck front under-run protection systems.

Aerodynamic Side-guards and Spray-Suppression: In anticipation that a vehicle fitted with aerodynamic side-guards will not only offer fuel savings but should also reduce road casualties and improve spray-suppression, UK research on large goods vehicles continues to look at new measurement methods for assessing spray suppression and to assess all the benefits of fitting aerodynamic side-guards.

Load Security: The UK is working with other EU Member States to produce a European Code of Practice on the safe securing of loads.

Bus Occupant Protection: Our research on buses is studying the potential to prevent occupant ejection during a vehicle rollover, the suitability of adult seatbelts for use by children, and development of a non-destructive seat belt anchorage test for vehicles produced in low-volumes.

Primary and e-Safety

Although ESV has in the past been mainly about areas such as occupant protection in crashes, primary safety (preventing accidents happening) has always been important and continues to advance both in traditional areas but perhaps mainly in the application of electronics or "Advanced In-Vehicle Systems (IVS)" as referred to in one of the technical sessions.

Primary NCAP: Euro NCAP continues to investigate the potential of improved primary safety. The UK contributed the fundamental research to underpin this work and this has been developed in conjunction with the vehicle manufacturers and system suppliers. Progress on devising assessment methods has been good but one of the fundamental issues that is now being tackled is the evidence-base to support the introduction of new tests. While this is being addressed, work is focusing on encouraging specific electronic-based technologies such as Electronic Stability Control (or ESP) and speed management systems e.g. driver-set speed-limitation devices.

The UK is closely involved with these developments and chairs the relevant EuroNCAP working group. On ESP systems, there is a clear and growing body of evidence to support real benefits in terms of accidents and injuries but the immediate challenge is to bring this information to consumers. EuroNCAP has a clear role in using its well developed communications mechanism to develop consumers understanding of these systems and to promote their wider uptake. On speed limiters, EuroNCAP is starting its work with driver-set systems but recognises that the really big safety benefits will be from intelligent systems that use, for example, satellite communications.

Intelligent Speed Adaptation (ISA): Inappropriate speed is a factor in a significant number of accidents. Intelligent vehicle systems that use digital speed maps and GPS location have the potential to reduce those accidents and, on motorways, could also smooth traffic flows and increase road capacity.

The UK is about halfway through a research programme including on-road trials which is assessing how drivers respond to ISA over longer periods of use. When complete, this will provide a wealth of data from 4 sets of 20 drivers using identical ISA equipped cars for 6 months each. The ISA system being used is a voluntary one, i.e. the driver can choose when to have the system enabled; the use of ISA and compliance with speed limits are the major aspects of driver behaviour being monitored. Driver attitudes before, during and after the trials will also be monitored.

Our research will contribute to broader Europe-wide discussion on ISA which includes research in several countries and the involvement of the European Commission. But if ISA is to be taken up more widely in the market place, a key issue will be the supply of road speed limit information in digital format. Once enabled, a voluntary ISA would then have a greatly enhanced capability to follow speed limit changes.

EXISTING CONSUMER INFORMATION

The UK considers that the provision of objective information to consumers in an easily understandable way, which can help them to choose safer vehicles and related products, is an important means of improving safety.

Euro NCAP

EuroNCAP is now established as the leading consumer information programme on vehicle safety in Europe. Building on fundamental UK research in the 1990s, Euro NCAP now has the support of five European Member States, the Commission, motoring, consumer and insurance organisations. While many car models now achieve 5 stars for occupant protection, it has not proved so effective for pedestrian protection. While we welcome the recent increase in models achieving 3 stars, they still form a minority with many still being rated as 1 star. EuroNCAP is continuously developing and now includes an assessment of child safety in the car model tested and is looking at the possibility of including a whiplash assessment.

Child Restraint Assessment Methods

A child restraint is one of the most important purchases by a parent and information on the best products available can help them make an informed choice. This is an area where we have been carrying out research in a consortium (New Programme for the Assessment of Child Seats, NPACS) including two other European government organisations, the European Commission and consumer, motoring and insurance groups. The UK contribution has drawn on national accident databases and is examining areas such as methods for assessing usability, risk of misuse and dynamic performance in front and side impact. It will take into account the fact that most child restraints are "universal", being designed for use in any car.

RECENT LEGISLATION

Pedestrian Protection

Pedestrian protection by improving the design of car fronts has been the UK's longest running area of research and will soon open a new chapter in vehicle safety when Directive 2003/102/EC takes effect for new models in October 2005. We estimate that this first phase when fully implemented will save about 12% of those killed or seriously injured in the UK.
This year we expect revised proposals for phase 2 (for implementation in 2010) that will allow a flexible approach with secondary and primary safety playing a role. Implementation of phase 2 should increase the KSI savings to about 20%. For manufacturers, pedestrian protection has been a major design challenge but it is now part of the DNA of European car design. One of the encouraging aspects has been the small but growing numbers who have implemented improvements ahead of the Directive, as seen in some Euro NCAP results, while competing in the market with those who have yet to incorporate such improvements. Technical solutions will vary, depending on feasibility, styling and costs for the models concerned.

Child Restraints

We welcomed the amendments to UNECE Regulation 44 to include the ISOfix standard fixing requirements, which offers improved performance and easy attachment of the child restraint to the car, thus avoiding a potential misuse factor. A considerable amount of effort goes into European projects aimed at delivering improved regulatory standards. A significant strand in our work has been the development of a new side impact test, which is being considered by ISO.

Tyre Wet-grip and Run-flat

The UK has played a leading role in developing a wet-grip test and limit values for tyres and this has now been agreed for including in legislation. We consider it important especially since without these standards, the introduction of tyre noise requirements could result in some manufacturers compromising on grip. We also welcome the introduction in Europe of a test method for run-flat tyres, including a driver warning-system requirement.

Speed–limiters

Controlling speed to appropriate levels is one of the UK's current road safety priorities, so we welcome the recent (from January 2005) extension of EU requirements to fit speed-limiters to goods vehicles down to 3.5 tonnes gross weight and to passenger vehicles with more than 8 passenger seats.

Adaptive Head-lights

We welcome changes in European legislation to provide for the industry's introduction of head-lights, which automatically adapt to certain road and driving conditions (in particular during cornering) to provide both improved vision for drivers and help to reduce the problem of glare.

Steer-by-wire and Automatic Low-speed Steering

We also welcome recent changes in legislation to permit "steer-by-wire" and automatic steering below 10km/h (using signals initiated on-board the vehicle) while ensuring that the driver remains in primary control of the vehicle at all times.

Rearward Vision

Recently agreed revisions to European legislation on rear-view mirrors will significantly increase the rearward field of view from both heavy goods vehicles and buses, especially concerning driver's view of pedestrians and cyclists. The UK contributed to these and welcomes them, especially as they should help to resolve problems associated with international traffic (UK is one of few European countries with left-hand traffic rule).

MARKET DRIVEN ADVANCES - A CHALLENGE FOR GOVERNMENTS

We are now in an era where the ability of manufacturers to develop technology exceeds the ability of governments to keep pace with appropriate

assessment methodologies. The pace of delivery of new systems using radar technology is likely to accelerate considerably in Europe from late 2005 due to a temporary relaxation in radio spectrum allocation to allow sensors required by the industry.

The introduction of vehicle electronic systems intended to assist the driver is advancing very rapidly. Examples of systems already available include autonomous cruise control (ACC), lane departure warning, brake assist, electronic stability systems (ESP) and adaptive lighting systems. The degree to which systems can intervene is increasing and we are moving into an era where detection of unavoidable accidents situations may serve not only to pre-arm secondary safety features such as seat-belt pre-tensioners but to apply automatic emergency braking to help reduce the impact severity. Vision enhancement can help drivers at night or in poor visibility conditions. Where accidents do occur, emergency call (e-call) can inform the emergency services.

Authorities must be creative in how they deal with these systems. As a general rule, standards are best when based on performance assessments of complete systems irrespective of the technology used and we should be aware that individual products intended to provide the same generic function can differ appreciably in their real-world effectiveness.

A key challenge will be helping drivers understand how the systems operate. This is an issue not just for the new owners but possibly more so for subsequent owners and occasional drivers who may not be so familiar. A lack of standardisation in warnings and variations in capabilities between systems could lead to risks of misunderstanding and misuse by drivers. For instance, is it really a good idea to have different methods of giving the same message to a driver on leaving a lane? Yet such differences are already present in the marketplace and are difficult to prevent as manufacturers strive to introduce systems quickly for competitive advantage. The ability to check the continuing correct operation of key functions as vehicles age is a further important aspect that must not be overlooked.

We do not pretend to have all the answers and Human Machine Interaction (HMI) issues are being studied in a number of fora. In Europe, the e-Safety initiative is developing the current European Statement of Principles and this is feeding into a wider review being coordinated by the IHRA ITS group. Their work in-turn feeds into the UNECE World Forum-ITS group in Geneva where questions on standards and regulation will be addressed. While welcoming the pace of progress, it would be shortsighted not to recognise the risks as well as potential safety benefits.

TRANSPORT TELEMATICS

We should seek to take maximum advantage of technological developments in the transport infrastructure and in communications between the vehicle and infrastructure. The area of transport telematics is a rapidly evolving one, and I would like to finish on the longer term potential.

Co-operative Vehicle Highway Systems (CVHS)

CVHS is a generic term for a wide variety of technological applications that use ICT-enabled communications between the roadside and vehicles and between individual vehicles in order to enhance safety and efficiency through driver support or network management applications. We have been looking at the feasibility of CVHS and the potential policy benefits and all the associated business case and deployment path issues of in the context of future road transport, looking ahead to 2030 and beyond.

Others have also been researching CVHS. The USA and Japan have demonstrated the technologies already but our current study takes an innovative approach by seeking to understand the policy benefits rather than focusing on the technology itself.

I would like to highlight some key points:

- The potential benefits are far-reaching in terms of road transport. This seems true from a network management and efficiency, road safety and/or user perspective and may extend to altering enforcement methods, reducing driver error, enabling better control of road access and providing for a better and more socially accessible travel experience.

- More advanced CVHS deployment, where every vehicle is entirely controlled on the road by co-operatively enabling technology rather than the driver, could take 40 to 50 years to achieve in full.

- But, in moving forward from today, a crucial step is for government to determine policy advantages, any risks and its potential role in any deployment path.

- In the near-term (say up to 10 years) progress may mainly be industry initiatives marketing in-vehicle systems where the driver is clearly in command, though aspects of control may be delegated e.g. close following, manoeuvre/collision warning, voluntary ISA using national data.

- There are significant challenges to any CVHS deployment at the technical and operational levels and in terms of demonstrating a business case. A key challenge is acceptance, together with the legal framework that would be needed to maintain acceptance at road user and CVHS provider levels.

- CVHS development should not be taken forward at national level alone, not least because of the international dimension to vehicle design.

This is a general overview. An illustrative example where safety could be enhanced might be a designated safety zone near a school where pedestrians and vehicles mix. Only vehicles capable of having their speed restricted and with a certain minimum level of pedestrian friendliness might be allowed within the zone. Infrastructure systems could set a safe speed limit according to the expected level of pedestrian activity.

The key point is that linking the infrastructure and vehicles allows innovative approaches to traffic and vehicle management. This gives added benefits over just roadside or in-vehicle technology.

And Finally

This paper ranges over our current progress in reducing KSI, several areas where we expect or are seeking further gains and ends with potential technological capabilities including those that link the vehicle and the infrastructure which would not have their full effect until perhaps 50 years into the future – a time when mobility, and I hope casualty levels, will be transformed.

As we strive to reduce casualties further, I would like to look back a moment to recall that high levels of road casualties existed before the advent of the motor car. In the late 1890's, the UK had 1663 fatalities of which 11 were linked to velocipedes or early bicycles and only 7 to motor vehicles. We can only guess at the number of seriously injured. But today, we have the hugely advanced mobility of the 21st century for only twice the fatality level of the 19th century and perhaps a comparable KSI level. I doubt that this would have been predicted by even the most optimistic 1890 road safety expert, had such a person existed. Let us hope that the experts in 2050 will see a comparable transformation in terms of the technology level of our transport systems and a dramatic fall in casualty levels.

Whether we are dealing with further improvements in existing areas, such as refining restraint systems or areas like pedestrian protection or compatibility, valuable savings can still be made. But perhaps the largest savings will come from implementing new technologies both in the short and longer terms. I am certain that all will play a role even though there may be shifts in their relative contributions.

ESV is a key forum for such discussions bringing together those in government seeking further safety improvements and specialists from industry and research groups opening up technological advances.